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ABSTRACT

The University of Minnesota's Special Education Administration Training Program (SEATP) is a competency-based education program, developed from a systems orientation model, and used for continuing education of professional administrators. The report presents an overview of the SEATP program under the following topical areas: (1) background information, including a brief discussion of the position of special education directors, their educational needs (primarily those needs documented in Minnesota), and the concept of competency-based training; (2) a description of SEATP in operation, including salient features of the program and the sequence of activities which the participating director of special education would complete; (3) presentation of a general model for development of this or similar preservice or continuing education programs, a discussion of the purpose and applications of each component, and examples of procedures, measurement, tools, etc. from SEATP to resolve those issues; (4) discussion of competency-based education issues as they concern the Special Education Administration Training Program. (MW)

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Special Education Administration Training Project

Program Description*

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INTRODUCTION

In September, 1973, the University of Minnesota began operating a new training program for special education administrators. Known as the Special Education Administration Training Program (SEATP), the project is a joint venture between two departments of the University: Departments of Special Education and Educational Administration. It is supported by a grant from the Bureau of Education for the Handicapped, U.S. Office of Education, and by funds from the University of Minnesota.

The program is designed simultaneously to meet a current, pressing need in Minnesota and also to serve as a model that can be replicated in training administrators and practitioners in other areas of human services (e.g., practitioners and administrators of day activity centers, group homes, nursing homes, etc.). In addition, the general model of this program may be applied to preparation programs for other types of positions.

SEATP is a (1) competency-based education program, (2) developed from a systems orientation model, and (3) used for continuing education of professional administrators. Each of these three features was adopted to promote educational effectiveness and efficiency.

A competency-based (or performance-based) preparation program is one in which

> ...performance goals are specified, and agreed to, in rigorous detail in advance of instruction. The student must either be able to demonstrate his abilities or perform job tasks. He is held accountable, not for passing grades, but for attaining a given level of competency...the training institution is itself held accountable for producing able practitioners. Emphasis is on demonstrated produce or output.
>
> (Elam, 1971, pp. 1-2)

SEATP's adoption of a competency-based approach is an attempt to focus on education directly applicable to the special education administrator's

actual job. As a consequence, the program (SEATP) should be better able to accommodate individual educational needs. In addition, the procedures developed to identify and validate competencies should promote prompt changes in the existing curriculum sequence to meet changing conditions and to facilitate replication of the model elsewhere.

The requirement that competency-based programs be able to demonstrate the proficiency of each trainee implies that they are data-based. SEATP has used a systems approach to identify each component of the training development sequence and to attempt to assure sufficient information for making decisions at each point. The systems orientation should also contribute substantially to ease of program modification and replication.

SEATP is a continuing education program which can be pursued by the employed director of special education while he is on the job. It has incorporated procedures used successfully in other continuing education programs (including those currently being utilized by the Continuing Education Program in Hospital and Health Care Administration, School of Public Health, University of Minnesota, and the American Management Association Continuing Education Program). Continuing education has the advantage of enabling more directors of special education to participate than would be possible with traditional on-campus training programs. It is also expected to be more efficient, both in terms of time and in cost, especially after the initial program development phase has been completed. However, the program can readily be offered on either a preservice or inservice basis, because of the nature of the competencies toward which the program is directed (minimum essential on-the-job performances).

Purpose of this paper

This report attempts to present an overview of the SEATP program, under the following topical areas:

(1) Contextual or background information about the program. This will include a brief discussion of the position of special education directors, their educational needs (primarily those needs documented in Minnesota) and the concept of competency-based training which was briefly mentioned in the preceeding paragraphs.

(2) A description of SEATP in operation, including salient features of the program and the sequence of activities which the participating director of special education would complete.

(3) Presentation of a general model for development of this or similar preservice or continuing education programs. The purpose and applications of each component will be discussed, and examples of procedures, measurement tools, etc. from SEATP to resolve those issues.

(4) Discussion of competency-based education issues as they concern the Special Education Administration Training Program.

BACKGROUND

The "administrator of special education" position

Special education programs and services for handicapped children have expanded during the last decade at an unprecedented rate. This sharp acceleration in services is due to a number of factors, including philosophical acceptance of the right of all children to an education, advocacy from parents of exceptional children as well as school personnel for special services, litigation and legislation requiring public schools to provide special services, and increased state and federal funding for

initiation and ongoing support of such programs.

This increase in the number of services appears to be marching along with expanding sophistication in the field. Research and demonstration programs have provided insights into the manner in which exceptional children learn. Correspondingly appropriate instructional technology are developed to cope with the problems. Many studies have also recommended new conceptualizations of service models and organization patterns to facilitate pupil learning and efficient use of resources. The impact of these new ways of looking at the problem is undoubtedly manifested in several programs we have today.

One of the most prominent of these trends is the philosophy referred to in its various guises as "mainstreaming", "normalization" or "the principle of least restrictive alternatives". It implies that the traditional methods of providing special education services need to be thoroughly reexamined. Meisgeier and King (1970), for example, comment that:

> The main alternative to a regular class has been placement in a special self-contained class. However, new sequential arrangements of instructional alternatives suggest that only a small number of exceptional children will require self-contained settings. The greatest number may be able to remain in the profit from the main system if resource help is available and if that system makes use of concepts such as differentiated staffing and provides viable mechanisms for the individualization of instruction. (p. ix)

As the schools' capability to accommodate handicapped children in regular education programs increases, the organization of special education services must change accordingly.

> In the past, general education focused on the "modal" or large group of typical children within the school population; special education was delegated the responsibility for educating those children who fell into disability categories defined by general educators as being children unsuited for the general educational program. But events in recent years indicate that these two quasi-distinct educational systems will converge, and the next decade may see all children and teachers within the parameters of education. (Weatherman, 1968, p. 17)

However, as these changes take place, a parallel trend has been establishment of separate administrative units for special education programs. The numbers of directors and other administrators of special education programs have been growing rapidly. A number of reasons account for this trend and these can best be examined within the content of the following broad rationale:

Purpose of special education. A general purpose for which special education is organized is to provide interventions designed to remedy or ameliorate those conditions which thwart normal development. The responsible organizational unit must include not only special teachers, materials, etc., but also provisions for effective advocacy of exceptional children's rights and needs, expertise to plan and supervise special education interventions, and to ensure ongoing communications with all levels within the school system and with appropriate community agencies.

Population to be served. Although many mildly handicapped children can be served in mainstream programs with appropriate support, schools are also being asked to provide intensive services for severely and multiply impaired children who were previously considered "uneducable", and who require intensive, expensive services. These services are often provided in conjunction with non-school agencies, in cooperation with other school districts, or by intermediate districts, rather than by the district in which the child resides,but the local school district retains responsibilities for program monitoring and tuition payments.

Categorical legislation and funding sources. Most states provide categorical state funding for special education services and increased federal support for special education has become available. These factors

have created needs for efficient planning, supervision, and accountability for these multiple funding sources.

Consequently, program development, organization, and supervision involve many complex responsibilities for the director of special education. He/she is expected to be a specialist in a variety of functions--development of learning systems for the handicapped, administrative procedures, communications with many agencies and persons concerned with the handicapped, curriculum development, and contributions to the advancement of general education. A broad classification of these functions might be listed as follows:

1. Devising ways of identifying children with special needs.
2. Assessing children with special needs in order to determine what kinds of special programs and services should be provided.
3. Planning the appropriate variety of interventions or program alternatives to mediate properly between the child's special education needs and tasks of rehabilitation and/or educational development.
4. Marshalling and organizing the resources needed in a comprehensive program of special education for exceptional children.
5. Directing, coordinating, and counseling appropriately in guiding the efforts of those engaged in the special education enterprise.
6. Evaluating and conducting research in order to improve special instruction and the quality of special services.
7. Interpreting and reporting information to gain public support and influence the power structure in helping to achieve program objectives.
8. Recruitment, selection and training of competent staff.

(Weatherman, 1968, p. 11)

Indicators of training needs

In the past, little emphasis has been placed by colleges and universities on education of special education administrators or on research training these leadership personnel.

Milazzo and Blessing reported in 1964 that of 225 colleges and universities preparing special education personnel, only 40 offered programs in administration and supervision. Only eight programs offered a sequence of general administration courses, and Milazzo and Blessing reported a need for specific training and experience in administrative endeavors. Willenberg (1966) noted the "paucity of specific research on administration of special education" (p. 134) and described several obstacles which might account for this lack. Connor (1970) noted "an intermittent and slow rate of interest in specifying and upgrading standards of preparation" (p. 373).

More recently, Vance and Howe (1974), in a followup study of students who had received federal training grants, noted that most special education administrator training was provided at the doctoral level, and stated:

> This is expensive, time consuming, and ignores the need for training at the subdoctoral level for those individuals just beginning a career at the management level in special education. (p. 121)

Vance and Howe also indicated needs for competence in general administrative processes and practices as a result of the mainstreaming movement, skills in understanding the implications of due process, and internship opportunities.

In considering development of preparation programs for these directors, however, a further need becomes apparent: the lack of precise definition of the curriculum due to the frequent ambiquity of the special education administrator's role.

Unlike the role of a school principal or business agent for a school district, the role of the special education administrator has been determined by factors such as state laws and regulations, educational practices in the national, state, regional, or local programs for which he is responsible, and the philosophy toward handicapped children which exists in his organizational unit. A recent discussion (Kohl and Marro, 1971) commented:

> It is difficult to define the typical duties of this leader since he is found in different administrative patterns and has a variety of titles with little relationship to specific functions. (p. 9)

In addition to variations in job descriptions among directors, further ambiguity is created by the differing ways in which other staff in the school district and community perceive the director's role, creating discrepant expectations of the administrator of special education (Hensley, 1973).

Despite these variations in role definition, however, some studies have noted a convergence on typical or most pressing problems encountered by special education directors in Minnesota, as preceived by the directors themselves (Bilyeu, 1973, Wedl, 1972).

Minnesota needs. Inadequate educational opportunities, insufficient role definition, a lack of relevant research on administrator preparation, the need for education at the subdoctoral level, and the need for administrative competencies are all national factors of which SEATP planners were aware. However, several studies of special education administration in Minnesota indicated training needs specific to this state, as summarized below.

As in other emergent fields, growth in special education programs has meant that the demand for qualified personnel has exceeded the available supply. To staff expanding programs, persons with minimal experience and certification have been hired, creating needs for inservice or continuing education programs. A recent study (Spriggs, 1972) indicated that this is true for administrators as well as special education teachers. The majority of directors or administrators of special education programs had assumed their present positions recently; for most, their present positions are their first administrative ones.

The same study indicated a high degree of educational level for new special education administrators. As a group, entry level administrators usually

have a masters degree in a particular special education disability area or teaching specialty. They tend to be young, with three to five years of teaching or related professional experience, but with limited administrative experience.

The educational background of these new special education administrators tends to be somewhat different from that of the typical administrator in education. Generally, education administrators assume their titles and positions only after completing a certification program in school administration, but the special education administrator typically enters without a certification program in education or other administration or management training.

Directors of special education are often promoted by their employing school districts into administrative positions. New directors are probably selected for their positions because of demonstrated success as special education teachers or for a variety of other reasons. The disproportionate number of special education administrators in Minnesota who were formerly school psychologists or speech pathologists suggests that selection might be influenced by prior visibility and interactions with other administrators within the district. Demonstrated administrative competence does not appear to be the major selection criterion.

Districts with new special education administrators are frequently rural or small town interdistrict special education cooperatives, located beyond commuting distance from the Twin Cities. The special education administrator is usually hired on a 12 month contract. Consequently, a new director is not in a position to leave his/her job and return to a university of college program for administrative preparation either during the school year or in the summer. Furthermore, new administrators are

expected both by the organizations in which they work and by the State Department of Education to administer the program successfully, and, when necessary, to learn on the job.

Competency-based education

Traditionally, preparation programs for teachers and administrators of educational programs consisted of a set of experiences which the prospective practitioner must undergo prior to receiving licensure or certification in his profession. Such programs tended not to specify in detail the tasks prospective educationists needed to be able to do or accomplish to qualify for licensure, nor was there any objective guarantee that graduates of such programs had been prepared to perform the tasks actually expected of them once they actually assumed teaching or administrative position.

Criticisms of traditional teacher preparation programs have been mounting since the 1960's, and the sources of discontent are varied. Some sources of dissatisfaction are general, including the increasing awareness in the last decade of lack of progress in meeting inadequacies in education and the implications that vastly improved preparation requirements are necessary both to meet changing conditions and to maintain the viability of public educational systems. Correspondingly, demands for relevance of preparation programs have increased, resulting in demands for participation of present and prospective teachers in determining education goals and methods. Another source of demands for change in teacher preparation programs comes from advances made in the art and science of teaching. Technological development, experimental instructional models, and the increased availability of federal funds to support these research and development efforts have enhanced the possibility that improvements in fact could be made. And undergirding all of these is the increasing pressure for accountability in educational programs.

What is competency or performance-based teacher education? The AACTE Committee on Performance-Based Teacher Education (1974) has offered the following definition:

1. The instructional program is designed to bring about learner achievement of specified competencies (or performance goals) which have been

   . derived from systematic analysis of the performance desired as end product (usually that of recognized practitioners) and
   . stated in advance of instruction in terms which make it possible to determine the extent to which competency has been attained.

2. Evidence of the learner's achievement

   . is obtained through assessment of learner performance, applying criteria stated in advance in terms of expected levels of accomplishment under specified conditions and
   . is used to guide the individual learner's efforts, to determine his rate of progress and completion of the program and, ideally, to evaluate the efficacy of the instructional system and add to the general body of knowledge undergirding the instructional process.

The foregoing implies, of course, that:

1. Instruction is individualized to a considerable extent.

2. Learning experiences are guided by feedback.

3. The program as a whole has the characteristics of a system.

4. Emphasis is on exit requirements.

5. The learner is considered to have completed the program only when he has demonstrated the required level of performance.

6. The instructional program is not time-based in units of fixed duration. (p. 7)

The terms "competency-based" and "performance-based" education are often used to refer to the same movement. "Performance-based" terminology stresses the manner in which the learner demonstrates knowledge and skills

and implies that knowledge gained must be employed in overt action. "Competency-based" terminology stresses the notion of a minimum standard for effective performance. Both identifiers connote educational programs that go beyond knowledge for its own sake, and emphasize performance and consequences of actions (Houston, 1974).

In the majority of cases, competency- or performance-based education has been used for teacher preparation; less use has been made of the concept in developing or organizing training programs for school administrators. Although competency-based preparation for school administrators is required or recommended as a basis for certification in Minnesota and other states, specification of competencies often has not yet reached the level of behavioral or at least measurable objectives (e.g., Dederick, 1973). In addition, most of the competency-based education literature is concerned with undergraduate preservice preparation of teachers, and less use is made of the concept for graduate continuing education programs.

Despite the lack of many precedents for competency-based continuing education programs for administrators, educational needs seen by SEATP planners suggested that a competency-based approach might well be appropriate and profitable for this program. The emphasis on performance goals, systematically defined and derived from the performance of recognized practitioners, is relevant to the lack of role definition noted earlier. The emphasis on assessment of both learner progress and effectiveness of the instructional system permits continued refinement of a relatively experimental program in its developmental phases. In addition, the flexibility offered in delivery of services increases the probability that the program can be adapted to the variety of conditions which exist even within a given position in a single state.

In special education, factors in addition to those mentioned above have resulted in changes in training programs. The field has grown at an unprecedented rate—both in numbers of pupils served and in sophistication of practitioners. Major shifts in orientation (e.g., away from the "medical model") have created training and retraining needs. Another source of demand is the number of persons in special education programs not appropriately certified, despite the general oversupply of teachers, and who require training programs that are at one and the same time entry level training and continuing education.

In response to these conditions, the movement toward competency-based or performance-based teacher education (CBTE or PBTE) has emerged. Advocates of competency-based education programs assert that benefits of adopting this approach will be felt throughout the educational system, and the payoffs are both immediate and long range. CBTE/PTBE promises:

Long range (10 years)	To improve quality of instruction in the nation's schools, and in consequence to improve teacher education.
Intermediate range (4-10 years)	To prepare knowledgeable and skillful teachers in a curriculum whose elements have been tested for validity against criteria of school effectiveness.
Short range (0-4 years)	To identify tentative teacher competencies, to prepare instructional materials and evaluation procedures, and to establish conditions to validate teacher education curricula and promote teacher behavior research.
Almost immediate	Stronger relationships between teacher educators, public schools and the organized teaching profession.
	Greater student satisfaction with skill-oriented teacher education programs.
	Increased accountability of teacher education programs.

(Rosner and Kay, 1974, p. 294)

PROGRAM OPERATION

SEATP characteristics

The University of Minnesota has had a preparation program for administrators of special education for a number of years. Like most conventional programs, it has been an on-campus program, focusing on training a limited number of persons at the doctoral level.

To reach the majority of new directors for whom the existing degree program may not be desired or appropriate, the Special Education Administration Training Program (SEATP) has been developed as an alternative education sequence. It has been designed specifically as a response to the conditions indicated in the previous section, but also is seen as having the potential for widespread adoption for training special education administrators in other states or for training administrators and practitioners of other human services programs. SEATP has seven basic features:

1. The objectives of SEATP are stated as competencies of a director of special education.
2. These competencies or performances are derived empirically from examination of the job which existing special education directors perform.
3. There exists an identifiable core of minimum essential competencies for all director of special education positions, despite variations in individual job descriptions, scope of authority, line or staff designation, size of program, and single or multidistrict organization. These core competencies constitute the SEATP curriculum.
4. Instruction received by a participating director of special education is based on his or her individual needs as determined by prior and ongoing assessments.
5. Instruction is field centered.

6. The types of instruction offered emphasize teaching of facts and concepts and the practice of skills relevant to performance in the position.
7. The basis for evaluation of the success of the training program is student (administrator of special education) practices, learning, and performance.

Each of these seven points will be discussed in greater detail below, along with corollary descriptive characteristics of the program and an indication of assumptions on which these characteristics are based.

Competency-based education. The first characteristic of this program, its competency-based orientation, reflects a number of current educational trends. The recent press for accountability in educational programs, the desire to reduce fragmentation and overlap in training sequences, the need to individualize instruction, and the advantage of communicating to the participating student what is expected of him have all contributed to the emergence of competency-based training programs in teacher education. In some cases, a competency-based orientation is required of training programs for their graduates to receive state certification, although Minnesota certification for directors of special education has not at this time specified which competencies are to be attained. In SEMTP, the competency-based orientation also serves to integrate the diverse elements which could usefully go into the content of the program and to facilitate participation of persons from various disciplines.

Competency-based instructional programs assume that the competencies or performances which constitute an educational program can be identified and stated. Although some people will contend that this is a controversial point in competency-based teacher education, the results from needs assessment activities and review of literature in the field of special education administration strongly suggest that competencies in this area can be identified and stated.

Empirical derivation of competencies. Traditional training programs attempting to convert to the competency orientation have sometimes tended to rely on the judgments of university faculty as a means of deriving competencies. The second SEATP program characteristic is the method of derivation of competencies for this training program, which has been done by surveying the population at which the training program is directed. Although a consensus on competencies by experienced special education administrators at local, regional, and state levels, and college and university faculty has been obtained, a study of the role and function of the director of special education and observation of Minnesota special education directors has also been used to empirically derive those tasks and those performances which constitute the special education administrator's job. Competencies for this training program have been derived from these needs assessment activities. (The methods used to derive SEATP competencies are described in the program development section of this paper.)

Although this basis for establishing educational program criteria may appear to assume a certain amount of stability in position description, it is recognized that any position is a dynamic and changing one and that preparation programs will require concomitant revision. Regulations, increases in knowledge in the field, and changes in accepted practices will all influence the knowledge, attitudes, skills, and task capability necessary for minimum performance in a generalized position. Consequently, instructional content and performance criteria will change over time, as the job changes. The program design provides for regular periodic reassessment of competencies essential for perofrmance of the special educaiton administrative position. Some adjustments will be made on an ongoing basis; overall reassessments of specific competencies will be made every three years and at any time when changes in education organization, operations, legal constraints, and

external forces (e.g., medical progress) suggest that the position has undergone substantial change.

Core competencies. The program asserts that there exists an identifiable core of minimal essential competencies for all special education directors, that they can be agreed upon, and that those competencies will form the content or curriculum of the preparation program. SEATP personnel are well aware of the variations which occur among specific positions in Minnesota, some of which vary systematically according to location (i.e., urban, suburban, or rural; single district or inter-district cooperative; or size of program); others according to range of responsibilities and amount of authority given a specific director. Additional sources of variation are idiosyncratic to the needs and desires of a particular school district. Consequently, employers recruiting prospective special education administrators may desire performances and skills not included in this training program. However, these tend to be in addition to the minimum core skills which have been identified repeatedly through studies conducted under this training program and elsewhere. SEATP assumes that persons who have attained these core skills can function in an entry level position and can adept to the variations which occur among districts.

Individualized instruction. Competency-based preparation programs make it possible to pinpoint individual needs. This program assumes that, despite a common lack of experience on the job and little prior formal preparation in education administration, new special education administrators will vary in the extent to which they have already attained the minimal essential competencies. Initial performance on domain-referenced tests of content and on performance in simulations will determine specific preparation objectives for each participant. Consequently, the amount and content of instructional experiences will vary among participants. Continuing assessment throughout

the course of the preparation program will also enable the program to adjust to various rates of participant learning. This accommodation to individual needs applies both for instruction conducted in a group and on an individual basis.

Field-centered instruction. A prominent feature of this program is the location of instruction. Special education administrators tend to be scattered throughout the state. Because of their eleven and twelve month contracts, they are generally unable to attend classes held on the University of Minnesota campus in the Twin Cities. Instruction under this preparation program is therefore field centered. A number of program objectives can be met through individual study. Ongoing monthly group and individual meetings with field consultants (experts in specific content areas--e.g., fiscal) are scheduled in locations close to the participants' residences and places of work. The program assumes not only that field-centered instruction will increase the possible number of participants who are willing to take further preparation but also that the field setting is appropriate to the instruction to be offered.

Curriculum. The content of instruction offered through the program is also distinctive; it attempts to teach basic facts (e.g., knowledge of special education laws) concepts (e.g., program budgeting) and skills (e.g., ability to develop a child study subsystem). Methods of evaluation of the program are consistent with these kinds of instruction, consisting of demonstrated retention of the facts, concepts and skills presented and performance or application (actual or simulated) of skills taught. The assumption is made that a person can be successful on the job if he can demonstrate those skills and that knowledge. In many cases, application of skills taught to actual problems encountered in the administrator's ongoing cycle of activities will be required.

As indicated earlier, participants are trained at the master's level prior to entry into the program. Consequently, philosophical considerations are not stressed; nor are there extended direct attempts to influence attitudes. However, newly appointed novice special education administrators can profit from interactions with experienced school administrators and with their peers (other special education directors). It is expected that field consultants will serve as role models for the new directors. At the same time, use of field consultants represents deployment of valuable training resources often overlooked in traditional administrator preparation programs.

Performance evaluation

The basis for evaluation of the Special Education Administration Training Program is the student's (special education administrator) learning and performance (evaluation methodology is further described in the program development section of this paper).

As indicated above, there is a direct relationship between training offered and methods of evaluation. No attempt is made to show effects of this preparation program on student (child) learning. One reason for this is that effects of staff development on children's progress is still not quite clear and a topic that generates considerable controversy within comptency-based teacher education. Besides, there is little reason to believe that a direct result of administrator preparation will be seen from improvement in child learning, eventhough pupil growth and development is the purpose of all school-related activities.

Essential program characteristics, corollary characteristics, and assumptions on which these features are based are summarized in Table 1.

Insert table 1 here

Table 1

Special Education Administration Training Program Characteristics

Characteristics	Corollaries	Assumptions
1. Goals of the training program are stated as competencies or performances		Relevant goals can be identified and so stated
2. Performances are derived empirically from job	Training content and performance criteria will change over time as does job	This is a reasonable preparation base
3. Core of minimum essential competencies will be taught	Other performances may be desired for specific positions	Those skills can be agreed upon. Persons with these core skills can function in entry level positions
4. Instruction is based on individual needs	Amount and content will vary. Rate of progress will vary	Varying levels of prior training, experience, and ability
5. Instruction is field-centered		Continuing education for employed persons. Location is appropriate to the training to be offered.
6. Kinds of instruction taught--facts, concepts and skills	Evaluate by demonstrated retention of information and performance (Actual or simulated) of skills	Person can be successful in job if he/she has those skills and that knowledge.
7. Evaluate training program by student (director) learning and performance		There is that direct relationship. Can't show effects on student (child) learning.

Service delivery system

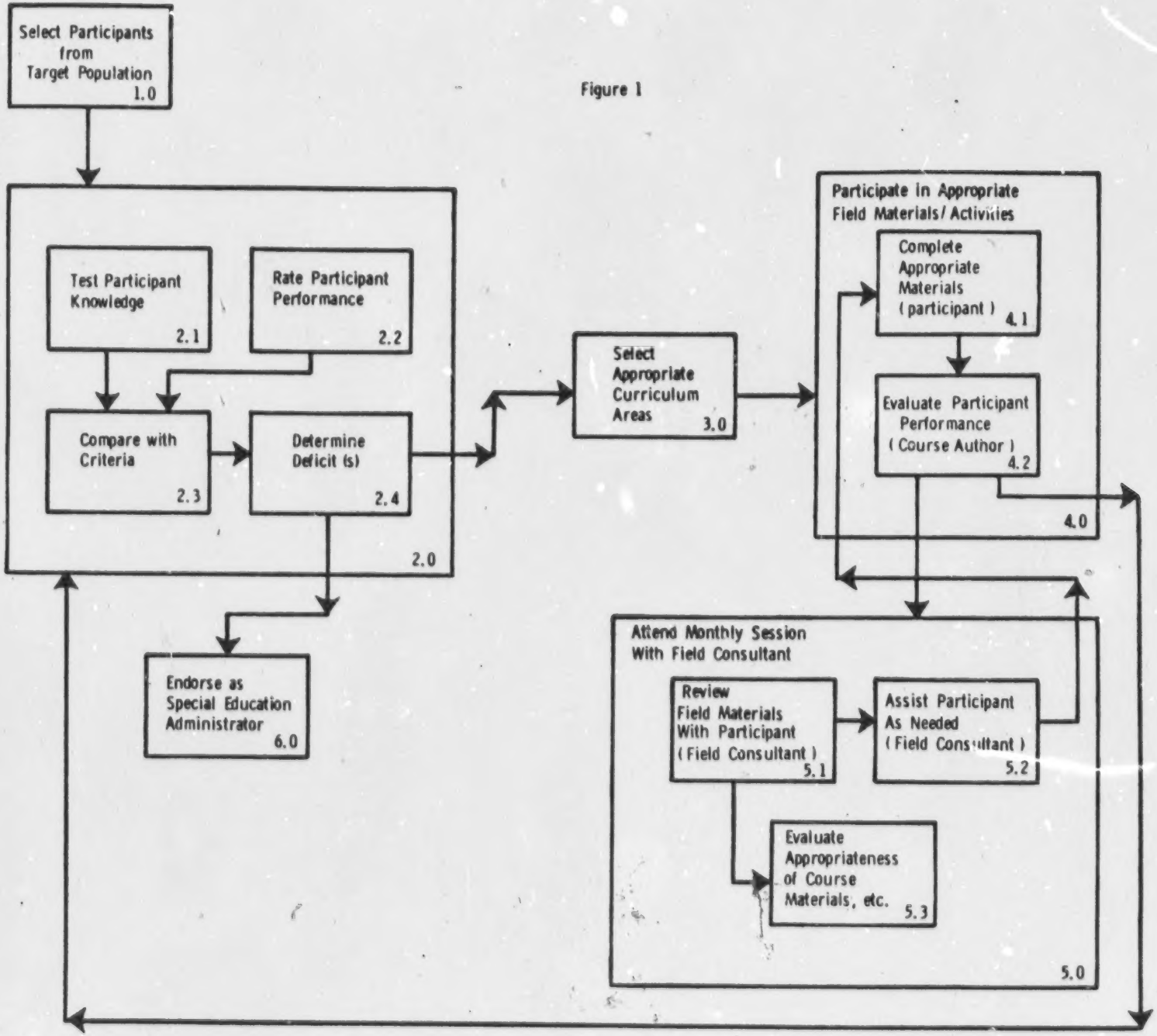
The manner in which the above characteristics appear in actual operation can perhaps be more easily understood by listing the cycle of activities included in SEATP as implemented. The purpose of the present section however is to describe in chronological sequence a special education administrator's activities as a participant in this program. A schematic representation of the service delivery system is shown as Figure 1. (A note on the source and rationale for the modeling language used can be found at the end of the program development section of this paper.)

Insert Figure 1 here

Selection (component 1.0 of Figure 1). Minnesota special education directors are eligible to participate in the program if they indicate interest and meet the initial selection criteria. At the present phase of SEATP development selection criteria are limited experience as a director of special education (less than three years), little or no formal training in educational administration, and a capacity limit of 25 participants. These criteria were established to maximize immediate impact of the project in its formative phases. In the future, participation will be open to all interested.

Program planning (components 2.0 and 3.0). Following acceptance into the program, a participant's first activities consist of an assessment of individual needs. First, participants are administered a cognitive domain-referenced test covering knowledge and application of facts, procedures, and concepts for all objectives in each of the three curriculum areas which have been identified: fiscal management, personnel management, and special education program development. The format of the test is

Figure 1


Select Participants from Target Population 1.0
Test Participant Knowledge 2.1
Rate Participant Performance 2.2
Compare with Criteria 2.3
Determine Deficit (s) 2.4
2.0
Endorse as Special Education Administrator 6.0
Select Appropriate Curriculum Areas 3.0
Participate in Appropriate Field Materials/ Activities
Complete Appropriate Materials (participant) 4.1
Evaluate Participant Performance (Course Author) 4.2
4.0
Attend Monthly Session With Field Consultant
Review Field Materials With Participant (Field Consultant) 5.1
Assist Participant As Needed (Field Consultant) 5.2
Evaluate Appropriateness of Course Materials, etc. 5.3
5.0

a series of approximately 300 multiple choice, true-false, and similar questions in each of the three curriculum areas. (If available information, such as results of prior training, indicates that a participant has already mastered an area, the test can be shortened accordingly.) Results are analyzed to determine areas in which participants do and do not have requisite knowledge, using predetermined SEATP criteria. Areas of deficit for each participant become his training objectives. (Criteria for adequate cognitive levels are established by correlating domain-referenced scores with performance assessment results.)

In addition to the domain-referenced test, assessment includes rating of participant's performance using simulations of tasks necessary to the position and self-reporting of on-the-job performance. Simulations are rated independently by a panel of judges, and the majority opinion is the participant's score. As with the domain-referenced test, performance areas are compared with the predetermined criteria, deficits are determined, and the results are used to formulate individual training objectives.

Cognitive pretests are administered via mail and are returned and analyzed prior to the performance assessment. Performance simulations are conducted in a workshop setting. The workshop is not only a convenient vehicle for performance assessment, but also provides an opportunity for initial instruction in the objectives for the participants and for program planning with SEATP staff. In addition, the workshop provides orientation to the field experiences in which participants are to be engaged.

Instruction (components 4.0 and 5.0). The participant's program in the field requires completion of course materials appropriate to his/her needs, provides periodic consultant assistance in improving performance, and allows opportunities for small group interaction on problem-solving

exercises.

First, the participant is sent a set of appropriate field materials and activities for each objective in which the pretest showed his/her performance to be below the criterion level. Course materials include presentation of concepts, source materials, and alternative suggestions for methods of implementing the concept. Participants then complete an exercise demonstrating their ability to implement the concept as it applies to their job; in many cases, course exercises are tasks which must be done on the job in any event (such as developing a child study subsystem). Exercieses are assessed by authors of the course materials, who base their judgments on evidence that the participant has correctly understood the concept and application of the concept is appropriate to the participant's situation. Exercises are rated "acceptable," "incomplete," or "unacceptable", and comments are included. This part of the field experience is conducted by mail.

Course authors' critiques are reported not only to participants but also to the participant's field consultant. Field consultants are persons who are expert in a particular curriculum area (e.g., personnel, fiscal, and program development), and who work in the same geographic area of the state as a group of participants. In many cases, field consultants are persons with whom participants are likely to have ongoing communications after the training program is completed. Each field consultant meets monthly with a group of participants who are studying in similar curriculum areas. During these day-long meetings, assignments are reviewed and problems are discussed. The primary role of the field consultant is to assist the participant in maximizing his/her achievement in both cognitive and performance areas, rather than to evaluate the participant's performance. Field consultants do have an evaluative role,

however, their reporting of problems encountered with instruction provides a valuable source of feedback for course authors and project staff in order to improve instructional materials. Participant evaluations of each instructional package and posttest scores are also utilized to determine areas of improvement in the course materials.

Following review with assistance by a field consultant, participants may modify or redo course activities as needed, and the same procedure--assessment by course authors and review by participant and field consultant--is repeated until adequate performance is attained. This cycle of input from course materials, practice or exercises included as part of the course materials, feedback on adequacy of performance, and assistance in improving performance continues throughout the training program.

Evaluation. After a participant satisfactorily completes instruction in a curriculum area, the assessment process (component 2.0) is repeated, using posttest versions of both the domain-referenced test and the performance simulation. The cognitive posttest for an objective. The post-instructional performance assessment given after instruction each include items directed only at the areas in which the participant was rated deficient on the pretest.

Credit. As indicated earlier, administrative certification is usually circumvented for entry into the position of special education director. It is possible that training offered (i.e., competencies attained) under this program could be directly applied toward future certification as certification requirements are reviewed, but at present this is not the case. Participants have the option of obtaining graduate credits in educational administration, which can be applied to a degree program for their SEATP coursework. However, the student must also meet other

graduate requirements currently in existence to qualify for either of these degrees. Consequently, component 6.0 of the service delivery system cannot presently be interpreted in Minnesota to include state certification, although certification could be readily incorporated. It might also be that competencies certified through the SEATP could be used to meet continuing education requirements established by the state, local, district, or other agency.

PROGRAM DEVELOPMENT MODEL

Previous sections of this paper have attempted to provide the context from which the Special Education Administration Training Program emerged, to describe the program in operation, and to defend some of the assumptions on which it is based. The present section is directed at persons interested in the manner in which SEATP was developed, or who might wish to consider adopting or adapting some of the essential features of the program to other instructional programs.

A systems approach will be used to clarify the basic phases or components involved in program development which are discussed along with examples of specific SEATP procedures and instrumentation. The modeling language used to illustrate the model was developed by Silvern (1972) and shows the flows of information through the system. Systems models of this type are intentionally developed at a general level and never change their major elements and relationships during implementation. This focus on inputs, activities, and outputs has the advantage of being relatively independent of content, and a program stated in systems terms can be more readily adapted to any field in which similar initial conditions obtain (i.e., where performance can be observed).

Overview

In its most general form, the SEATP model is relatively straightforward and has many features in common with other competency-based education programs.

Figure 2 indicates the sequence of developmental activities. First, the position or group of persons for whom an educational program is to be developed is specified and their characteristics and training needs are

described. Second the competencies which persons in that position should obtain are identified, based on characteristics of the position itself. Preparation of instruction and development of an assessment system proceed concurrently, as these two are interdependent. However, as the feedback arrows indicate, assessment affects the instruction component of the model. With the possible exception of initial designation of the population to be trained, development and modification of the training program are based upon objective data to a larger degree than is usual in teacher training, and most data management is computer based.

Insert Figure 2 here

Table 2 also provides an overview of the model by listing major program development questions to be answered for each component of the model; satisfactory decisions in response to each question may be considered to be the goals of that component. It also lists data sources (which will be discussed further below) that provide a basis on which SEATP program managers can make rational decisions.

Insert Table 2 here

Needs assessment

The first program development task, represented in Figure 2 as component 1.0, is to identify the target position, to estimate the extent of need for training within this target population, and to describe the population.

For some education programs, surveys of needs for preparation programs may tend to be bypassed due to legislative mandate or other external

Figure 2

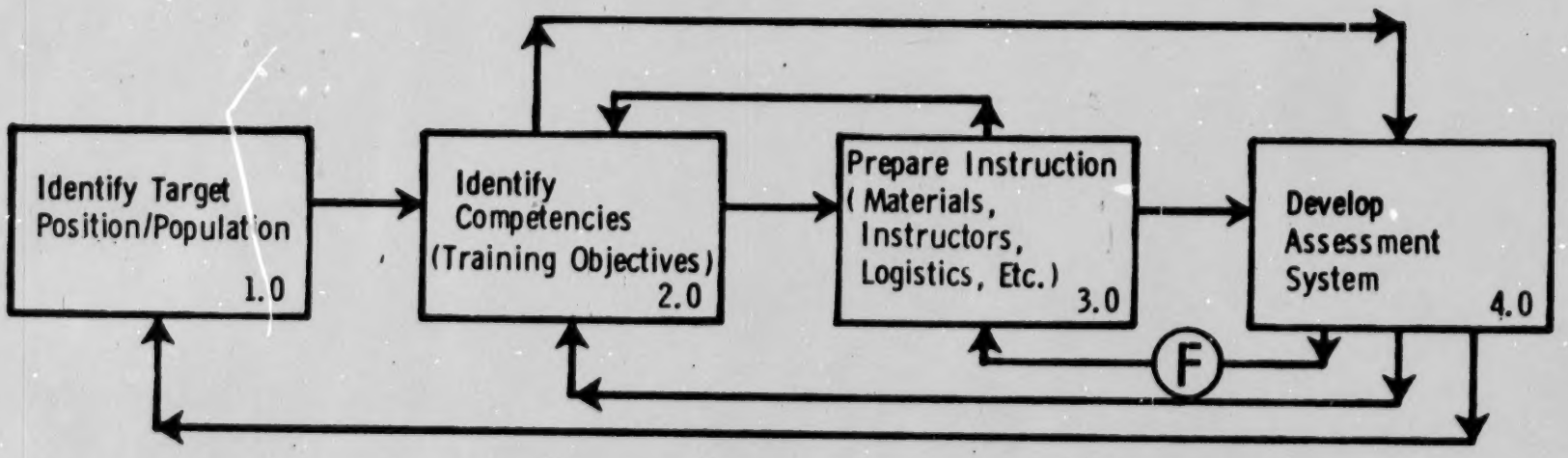

Identify Target Position/Population
1.0
Identify Competencies (Training Objectives)
2.0
Prepare Instruction (Materials, Instructors, Logistics, Etc.)
3.0
Develop Assessment System
4.0
F

Table 2

SEATP Development Model

Component	Major Questions (Goals)	Sources of Information
1.0 Identify target population/position	Is there a need for training ? Who should be trained ? How can these persons be described ?	Legislative (or other) mandates or preferences Literature in the field Requests made to training institution Needs assessment (e.g., demand personnel, present training levels of possible target populations) Data from prior training
2.0 Identify competencies	What do position incumbents have to do ? What do they need to know in order to perform adequately ?	Goal analysis Job analysis Anthropological field study Data from prior training
3.0 Prepare instruction (materials, instructors, logistics, etc.)	How should content be limited ? How should instruction be organized (service delivery) ? What materials/strategies for learning are available or need to be developed ? Who should provide instruction ? What instructional components or other factors influence probability of reaching training objectives ?	Judgements of professionals in the field, instructors, and participants Literature in the field Data from prior training
4.0 Develop assessment system	What courses should participants take ? What changes in competencies occur during and after instruction ?	Pre and post domain-referenced testing Pre and post performance assessment Performance on course materials exercises Data from prior training

directives. For others, demonstrating that there is a need for a preparation program is necessary to secure funding and other resources, and may be incorporated as an ongoing function of University self-examination and renewal processes.

Adoption of a competency-based approach implies that definitions of need for preparation programs are derived from and/or supported by a description of the population to be trained. Internal consensus among faculty, although obviously desirable, is not regarded to SEATP staff as sufficient to establish needs without supporting documentation obtained from the field. Information gained from this initial planning phase is useful in delimiting the content and determining organization of instruction (component 3.0 discussed below).

SEATP itself used a number of previously available sources of information in delineating the population to be educated. A review of the literature yielded summaries of the typical preparation and experience background of Minnesota special education directors (e.g., Spriggs, 1972; Bilyeu, 1973; and Wedl, 1973) which, along with a review of presently available educational opportunities, suggested that priority by given to expanded and improved preparation in administrative skills for present incumbents of these positions. As SEATP is implemented, data from prior training efforts provide additional sources of information regarding the target population to be trained.

Other programs may wish to use similar means, or may rely on demographic studies, internal and/or field surveys, Delphi probes, etc.

Competency identification

The second component of the SEATP program development model is the process by which competencies or desired performances are identified. A

multidisciplinary approach is used, employing three strategies (goal analysis, job analysis, and an anthropological field study) which are used to cross-validate each other. Each of these strategies has previously been used alone as the basis for performance specifications. Together the strategies present a reliable and more valid description of the minimum essential performances for a particular position, especially when viewed from the extent to which those three strategies duplicate each other.

The specification of competencies or performance criteria are illustrated in Figure 3; each of the techniques employed is described below.

Insert Figure 3 here

Goal analysis. Goal analysis is Mager's (1972) procedure for obtaining consensus among a group of people, and includes the following steps: First, a panel is selected, descriptive words and phrases are elicited from each panel member, and all responses are recorded. The panel then meets to edit the list. Members eliminate duplication and non-essential items, fill in deficient areas, and rewrite the list in performance terms. The group then rates each item for desired level of performance, specifies the importance or centrality of achievement at the task, and agrees to the accuracy of the resulting material after it has been edited into correct statements of behavioral objectives.

The goal analysis provides the general statement of performance which, when combined with the specific skills, tasks and knowledge from the position(job) analysis, allows relevant behaviorally stated objectives to be developed for the position being studies. Crucial to effective goal analysis is the composition of the panel. In the case of SEATP, the special

Figure 3

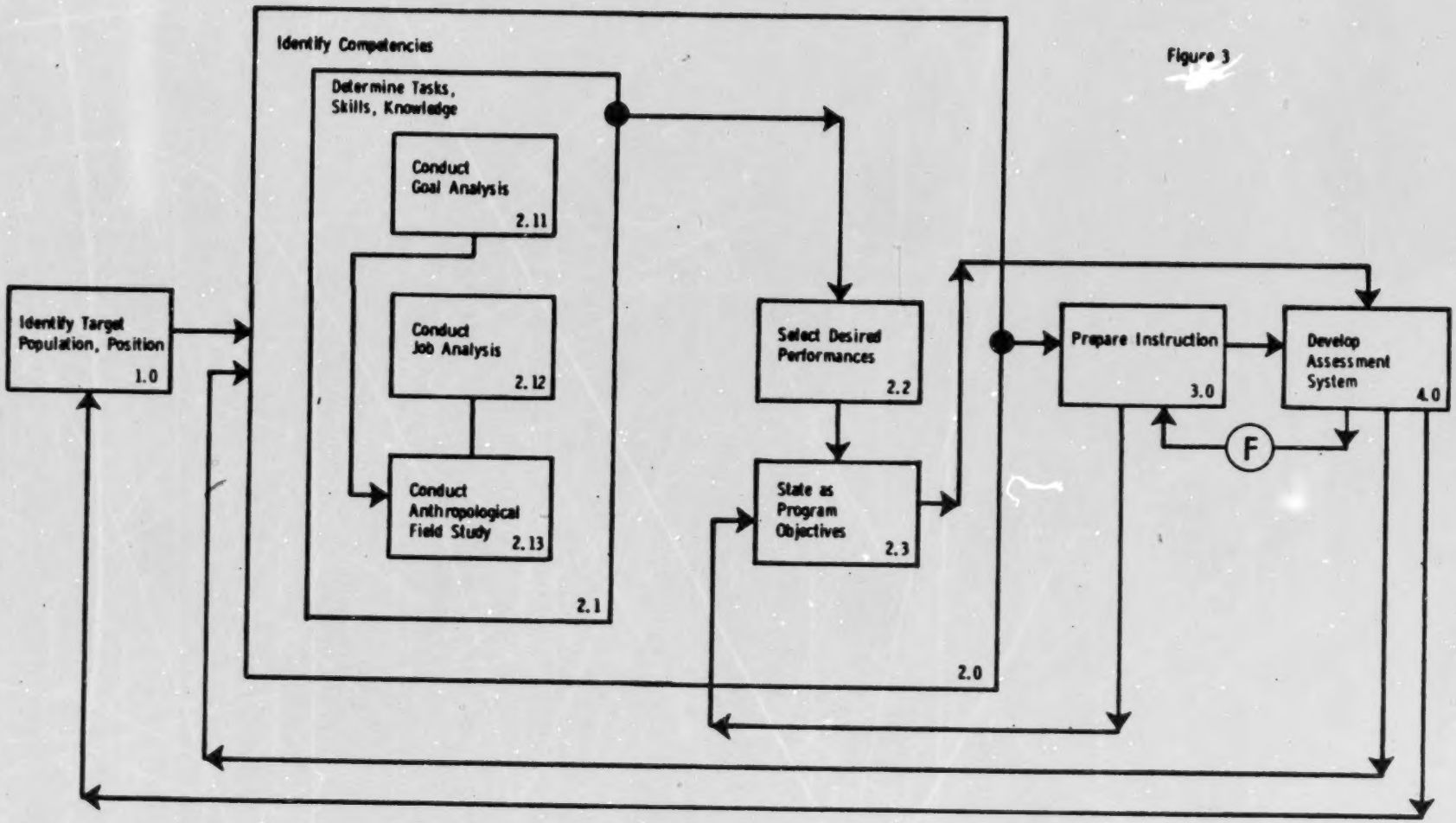
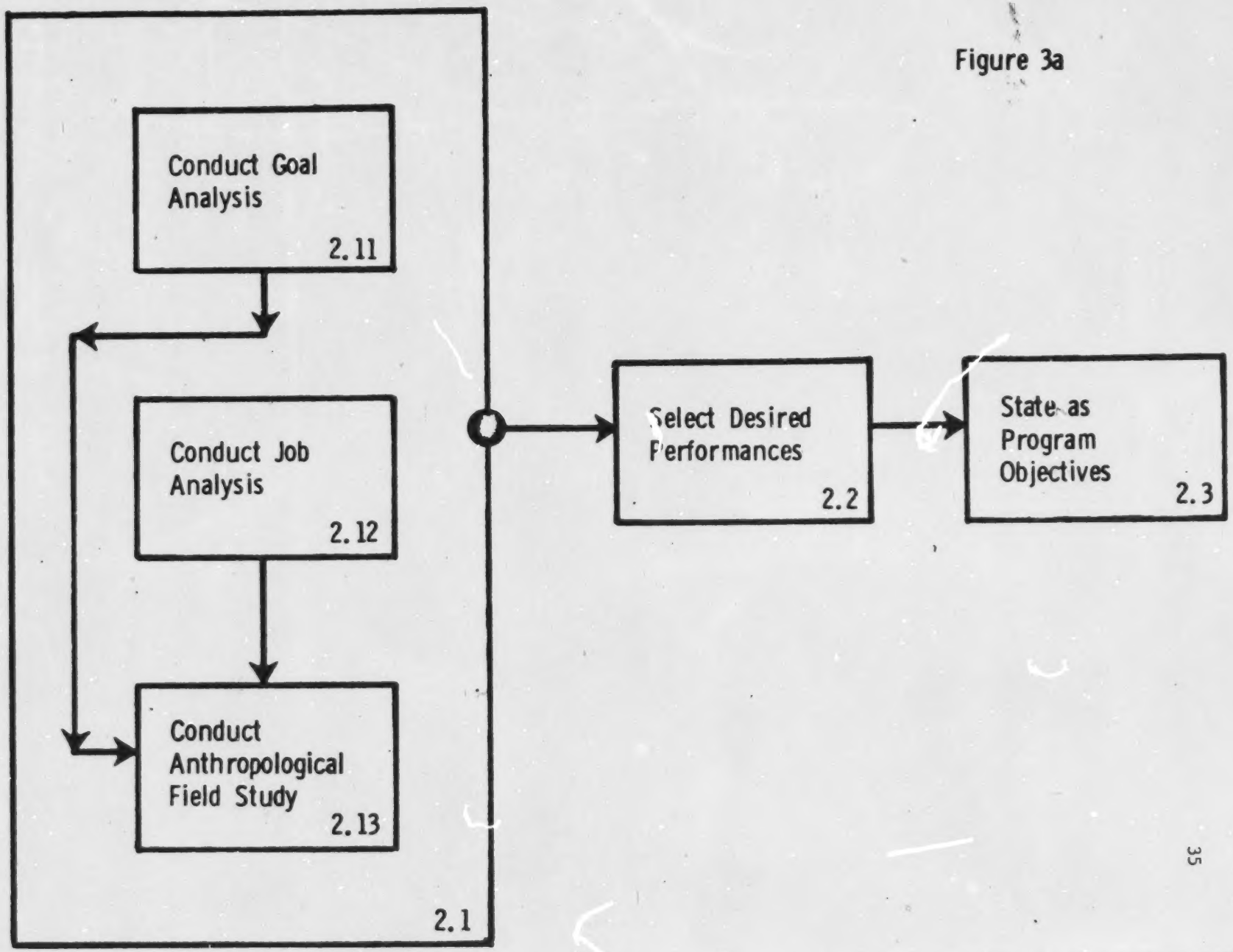

Identify Competencies
Determine Tasks, Skills, Knowledge
Conduct Goal Analysis 2.11
Conduct Job Analysis 2.12
Conduct Anthropological Field Study 2.13
2.1
Identify Target Population, Position 1.0
Select Desired Performances 2.2
State as Program Objectives 2.3
2.0
Prepare Instruction 3.0
Develop Assessment System 4.0
F

Figure 3a


Conduct Goal Analysis
2.11
Conduct Job Analysis
2.12
Conduct Anthropological Field Study
2.13
2.1
Select Desired Performances
2.2
State as Program Objectives
2.3

education administrator's job functions (as determined by literature review) were divided into three parts--fiscal management, personnel management, and special education program development--and separate panels were convened for each function. This permitted selection of specialists in specific areas to participate as panel members without making each group unduly large. Each panel included representatives from local school districts, regional consultants, State Department of Education staff, and professors of educational administration and special education.

Job analysis. Job analysis, the second strategy, uses a set of procedures derived from industrial psychology for careful study of a job within an organization. It has been defined by the United States Bureau of Employment Security (1965) as

> ...the process of identifying, by observation, interview and study, and of reporting the significant worker activities and requirements and the technical and environmental facts of a specific job. It is the identification of the tasks which comprise the job and of the skills, knowledges, abilities, and responsibilities that are required of the worker for successful performance and that differentiate the job from all others. (p. 5)

A number of different methods may be employed in conducting a job analysis. These include questionnaires and checklists, observation, individual or group interviews, logbooks, or judgments about good and poor job performance.

Previous studies of special education administrators tended to utilize analysis of existing job descriptions and self-reporting by questionnaires sent to directors. The SEATP job analysis used these procedures, but supplemented them with direct observation and structured interviews with a small stratified sample of the population. Tasks, skills, and knowledge reported by any of these means were summarized,

distributed to all directors for comments, and modified as needed. The resulting position description is contained in the job analysis final report (Harpaz, 1974).

Specificity and inclusiveness characterize differences between results of goal analysis and that of job analysis. Results of the job analysis included a lengthy enumeration of all those specific tasks which every Minnesota director performed. Goal analysis, on the other hand, included judgments of centrality or importance of more "global" performances and may have omitted some tasks entirely. The two procedures were used to check each other and produce a more accurate description.

Anthropological field study. Data from the anthropological study are intended to further improve the validity of the performance specification by identifying cultural parameters for the curriculum as well as by identifying minimum essential performances which substantiate those previously identified in the goal analysis and job analysis or which were overlooked. This approach tends to produce data not readily available from other sources, such as the annual cycle of activities of a special education director, information sources, and decision making processes. It documents the vast numbers and types of community and state agencies, and administrators and staff with whom the director communicates both routinely and occasionally. It also assesses the influences of different organizational structures upon the special education director's role.

The anthropological study utilizes ethnographic techniques and systems analysis. Participant observation in the form of participant-as-observer (as used by Harry Wolcott in his 1973 study of an elementary principal) provides the methodological base, supplemented and cross checked by several

other methodologies: present and past logs kept by directors, a time study, interviews, information on the director's calendar, and drawing of decision-trees. For the SEATP study, each of three directors of special education in three representative communities (urban, rural and rural-urban), representing three different types of administrative units (single school district, cooperative in and Educational Service Area and cooperative not in an Educational Service Area) are studied one week each month for one year.

Data from the anthropological study have multiple uses. If the study is begun well in advance of program implementation, it can be used in conjunction with the goal analysis and job analysis for initial competency specification. If carried out concurrently with instructional program activities, it serves to refine or modify initial performance statements. In either case, anthropological data are useful in setting up a framework within which simulations, course exercises, test questions, etc. can be devised.

Revalidation of competencies. It is recognized that position requirements have a tendency to change over time. In most positions, job requirements and competencies will not show substantial differences over time spans of less than three years. Consequently, SEATP intends to repeat goal analysis and job analysis procedures every three years to revalidate performance specification as director duties and competencies change. The anthropological study will also be repeated; the necessity for this is based upon the assumption of changes in the culture. (Theoretically, dramatic cultural changes are expected to occur once a generation--about 20 years. Data to support this time period is lacking, however, and further effort to develop a sound rationale is recognized as necessary.)

Preparation of instruction

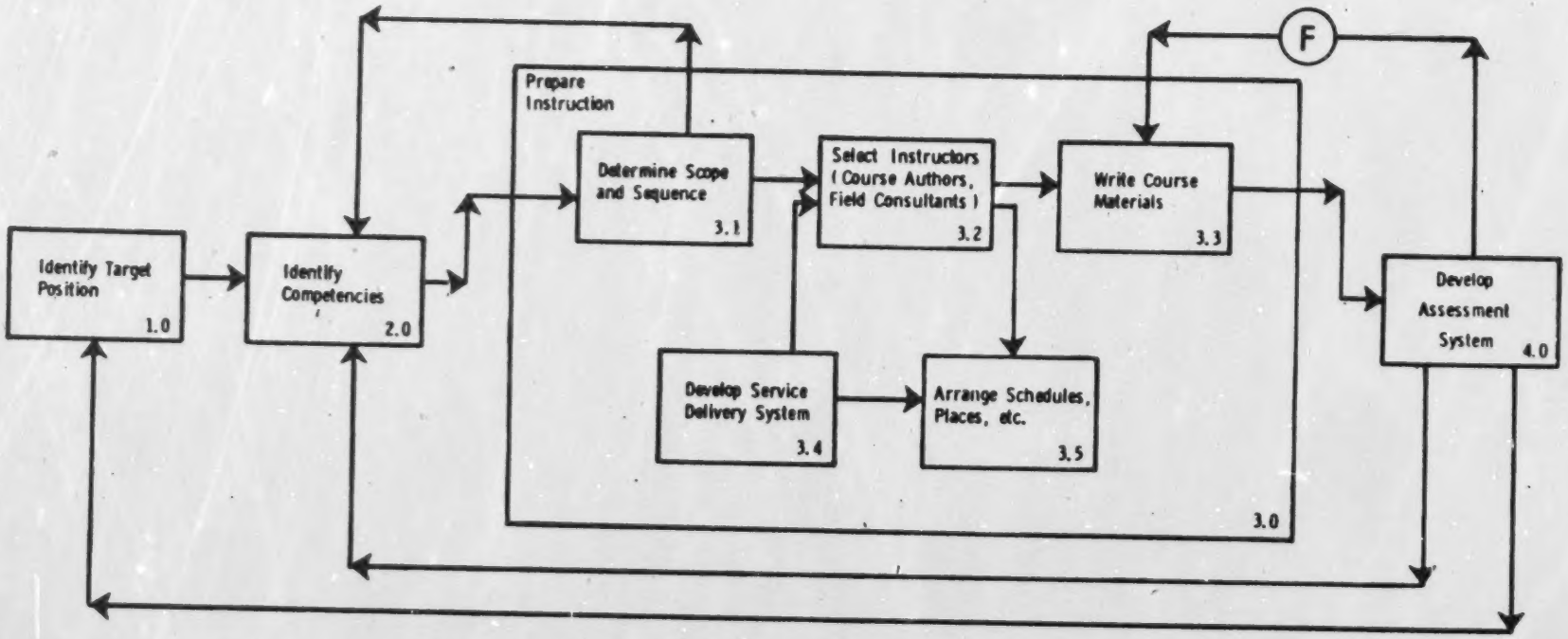
Components 3.0 (Prepare instruction) and 4.0 (Develop assessment procedure) are, chronologically, concurrent procedures and both should begin as soon as initial competencies have tentatively been identified. Indeed, the nature of the interrelationships between the two suggest that development of performance measures might preceed curriculum and other instructional preparation.

Preparation of instruction (see Figure 4) begins by delimiting the curriculum in view of priorities established in the goal analysis; job analysis and anthropological study; available information on present competency levels of the target population (such as preliminary assessment results); and pragmatic considerations such as time, extent of funding, and other resources. Once the scope and sequence have been determined, course preparation begins by selection of course authors who are specialists in specific content areas. These persons are provided with course objectives (the outcome of the competency identification process) and with questions from the domain-referenced test which pertain to those objectives (when available).

Course authors are responsible, during developmental phases, for selecting and/or writing appropriate reading materials and for preparing exercises on each phase of the content area to give the participant an opportunity to practice the skills being taught and to apply concepts which have been presented. (As indicated earlier, course authors have a continuing function. During operation of training, they evaluate performance on the course exercises and thus provide the participant with feedback on the extent to which concepts and skills have been mastered).

Insert Figure 4 here

Figure 4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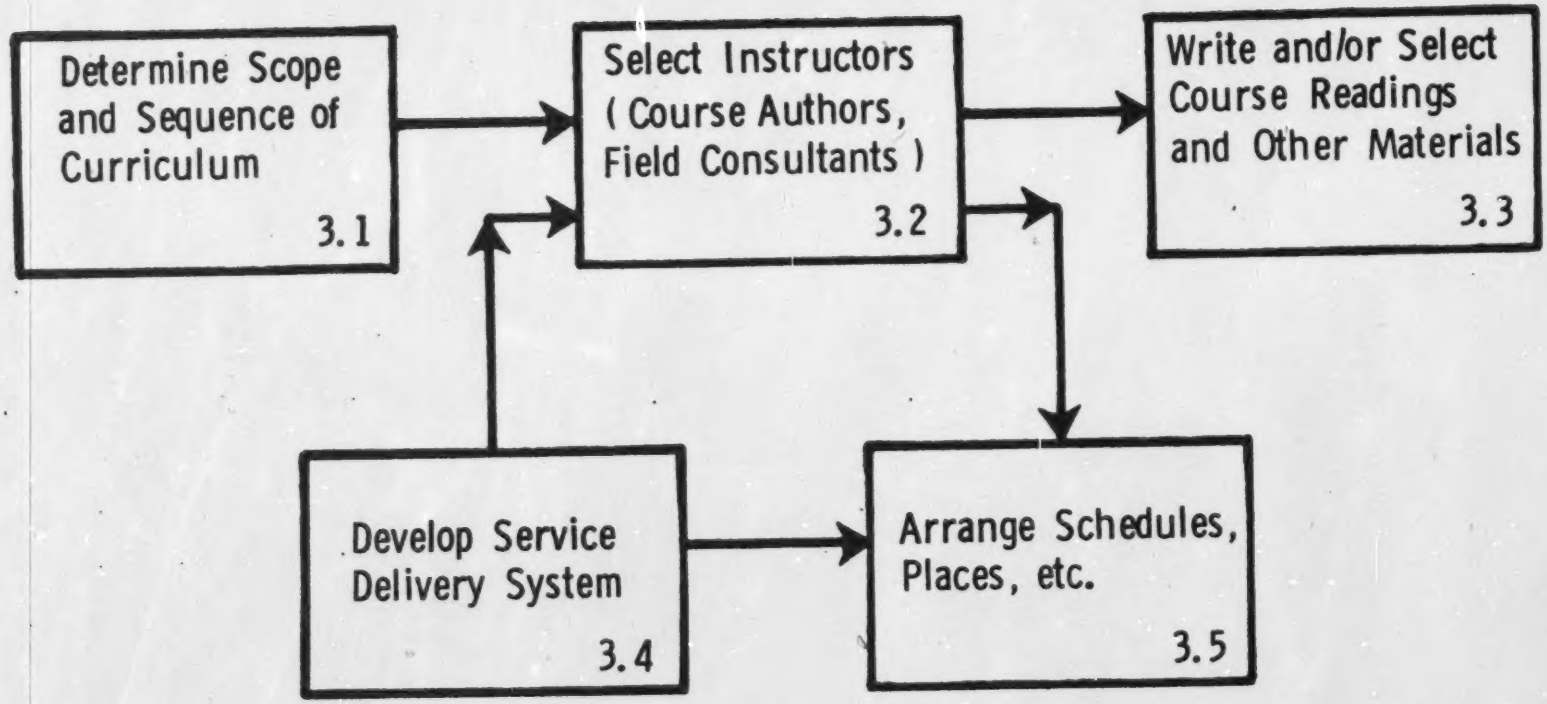
Prepare Instruction
Identify Target Position
1.0
Identify Competencies
2.0
Determine Scope and Sequence
3.1
Select Instructors (Course Authors, Field Consultants)
3.2
Write Course Materials
3.3
Develop Assessment System
4.0
Develop Service Delivery System
3.4
Arrange Schedules, Places, etc.
3.5
3.0

Figure 4 a


Determine Scope and Sequence of Curriculum
3.1
Select Instructors (Course Authors, Field Consultants)
3.2
Write and/or Select Course Readings and Other Materials
3.3
Develop Service Delivery System
3.4
Arrange Schedules, Places, etc.
3.5

Parallel to the development of curriculum and materials is development of the service delivery system. Needs assessment data on the population to be trained and known parameters of the content of training provide some cues to delivery requirements which must be met and resources (such as field consultants) which can be utilized. The service delivery system used for SEATP has already been presented in an earlier section of this paper. This can be used or adapted for a wide variety of programs. Logistical details may vary with each similar program developed.

Assessment

The fourth component of the SEATP program development model--assessment--is one of its most important features. As a competency or performance based program, SEATP is by definition a data-based system:

> Assessment lies at the heart of PBTE. Goals of instruction must be stated in assessable terms; learner performance must be assessed and reassessed throughout the instructional process; evidence so obtained must be used to evaluate the accomplishments of the learner and the efficacy of the system. Remove assessment from PBTE and all that is left is an enumeration of goals and provision of instruction which hopefully will lead to their attainment--not much on which to pin one's hopes for significant improvement in an educational program. (AACTE, 1974, p. 18)

The SEATP emphasis on assessment serves two major purposes similar to thost just alluded to. First, it enables program managers to determine on an ongoing basis the extent to which participants achieve, at the criterion levels, the program's objectives. Second, it permits objective determination of the appropriateness of instructional methods, content of instruction, and established criterion levels for achievement.

The SEATP program focuses on competencies necessary for performance on the job, and thus employs two basic strategies to determine the extent to which these competencies are attained: performance assessment, using simulations of actual tasks which all special education administrators

must perform, and cognitive assessment, or measurement of the knowledge which a participant must have in order to perform essential job tasks. These measures are obtained on a pre and post basis.

Other data are less formal, and are collected at various points prior to, during, and following the provision of instruction. They include information regarding participants' perceptions of their competencies and the training they are receiving, results of course exercises completed in the field, and reactions of field consultants in a position to observe participants' work.

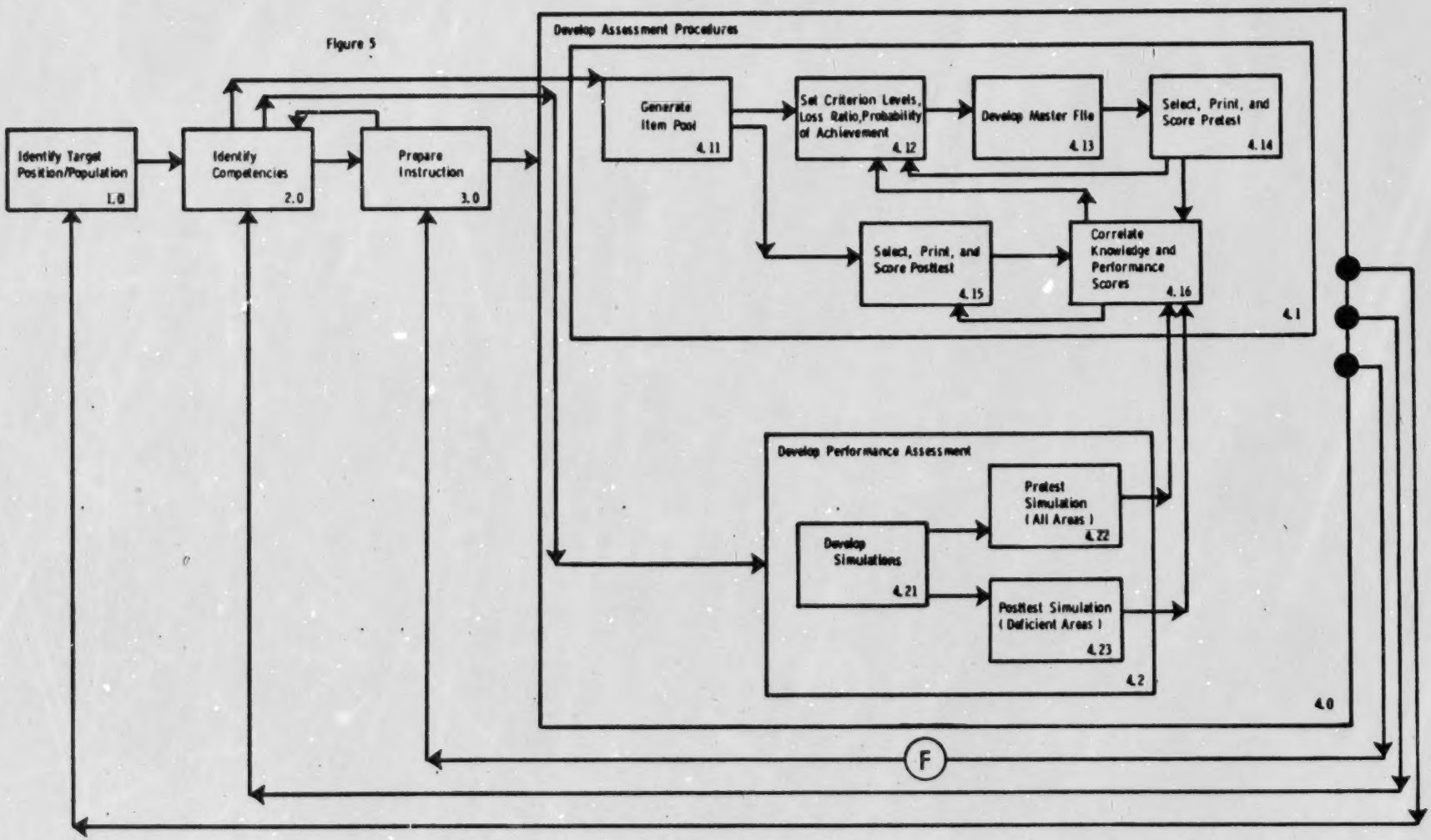
Complete descriptions of all instruments, subjective and objective data collection procedures, and methods of analysis can be found in the project's evaluation design (Deno, 1974). The following discussion will focus on those procedures and instruments which provide objective evidence of competency levels.

Figure 5 indicates the procedure followed for developing and modifying the procedures for cognitive and performance assessment of competencies. A more detailed explanation and flow chart for the assessment system, as implemented, can be found in Hendrix (1974).

Insert Figure 5 here

Performance assessment. Performance assessment consists primarily of a series of special education administrator job tasks, derived from program objectives, performed in simulated settings which approximate field conditions and rated by experts for adequacy. (Performance assessment by means of structured observations of participants' actual performance on the job was investigated, but discarded as not feasible due to high costs.) In

Figure 5


Identify Target Position/Population
1.0
Identify Competencies
2.0
Prepare Instruction
3.0
Develop Assessment Procedures
Generate Item Pool
4.11
Set Criterion Levels, Loss Ratio, Probability of Achievement
4.12
Develop Master File
4.13
Select, Print, and Score Pretest
4.14
Select, Print, and Score Posttest
4.15
Correlate Knowledge and Performance Scores
4.16
4.1
Develop Performance Assessment
Develop Simulations
4.21
Pretest Simulation (All Areas)
4.22
Posttest Simulation (Deficient Areas)
4.23
4.2
4.0
F

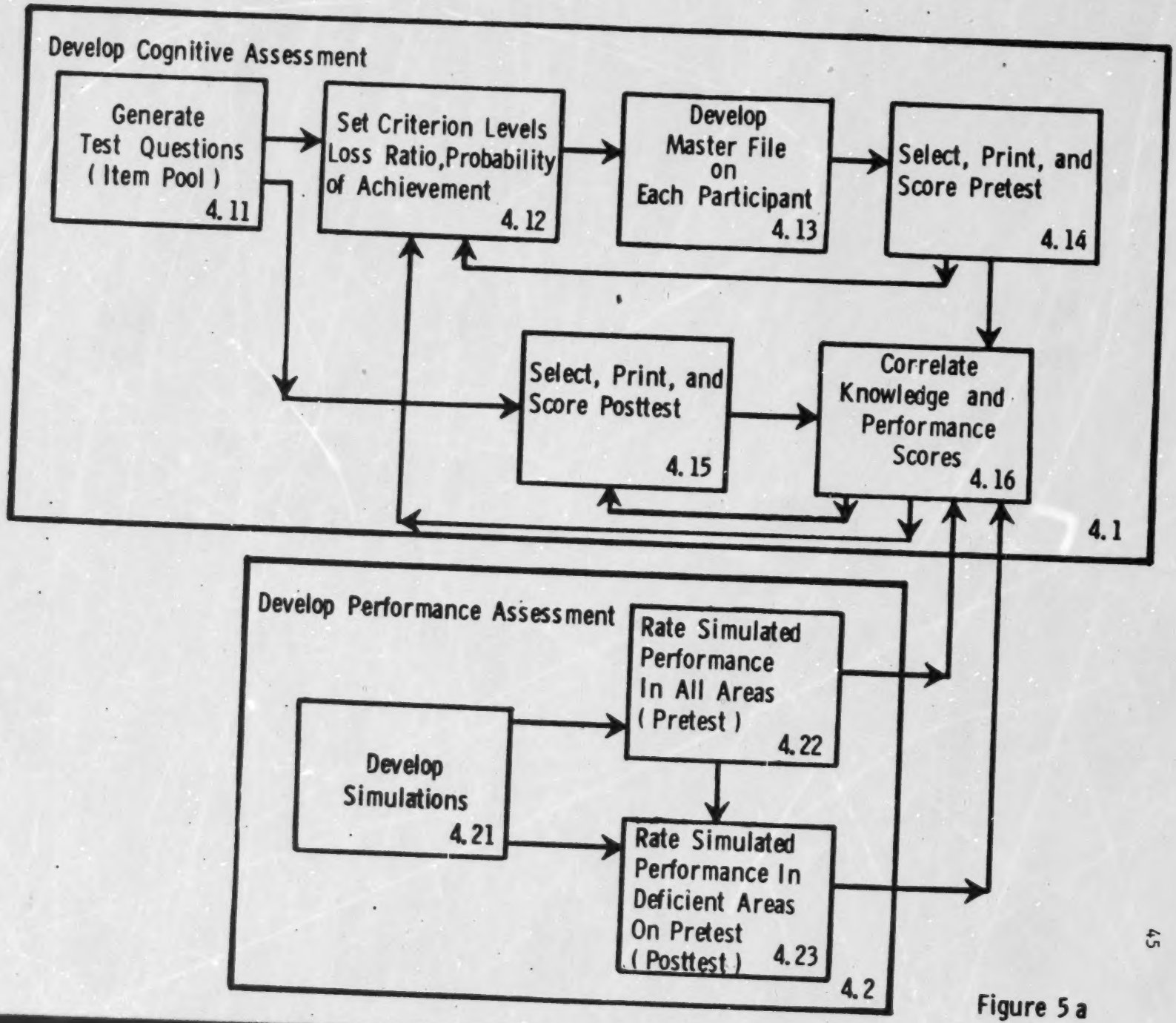

Develop Cognitive Assessment
Generate Test Questions (Item Pool) 4.11
Set Criterion Levels Loss Ratio, Probability of Achievement 4.12
Develop Master File on Each Participant 4.13
Select, Print, and Score Pretest 4.14
Select, Print, and Score Posttest 4.15
Correlate Knowledge and Performance Scores 4.16
4.1
Develop Performance Assessment
Rate Simulated Performance In All Areas (Pretest) 4.22
Develop Simulations 4.21
Rate Simulated Performance In Deficient Areas On Pretest (Posttest) 4.23
4.2

Figure 5 a

addition, participants' self-ratings of perceived proficiency levels are obtained and compared with observed levels.

Simulations developed for use in SEATP have been tailored to the specific situations an administrator will encounter. For example, SEASIM (Special Education Administration in Monroe City) simulation materials (UCEA, 1973) which are related to program objectives have been rewritten to apply to rural and multi-district programs. In many cases, however, no materials were available and these had to be developed by project consultants and staff.

Initial performance assessment (simulations and self-ratings) takes place at a pre-instruction workshop. Participants are provided with all necessary materials, and can complete the assessment in approximately 1½ days.

Each simulation is rated by five raters: two representatives of the existing special education administration training programs (degree programs) in the state, an experienced local special education director, a regional consultant, and a State Department of Education special education representative. The current president of the state special education administrators association is always included as one of the practitioners. Raters work independently of each other, and the identities of the participants are not disclosed to them. Each simulated task is rated "pass" or "no pass" according to the rater's judgment; the majority opinion (three out of five) determines the participant's score.

This use of simulations as an assessment tool departs from standard procedures; most training programs follow simulations with immediate instruction to improve performance. Instead, SEATP uses performance assessment to select areas in which instruction is to be provided. During the participants'

field experiences, feedback on simulated performance and further practice on those tasks through course exercises assist in improving performance in deficient areas.

Following instruction, participants are again assessed in those areas in which they were previously deficient to determine the degree of improvement.

Cognitive assessment. Many SEATP objectives specity tasks the director of special education is to perform, and demonstration of competency is complete and direct (performance of the task in a setting which simulates actual working conditions). Measurement of these tasks may be considered to be criterion-referenced. However, the knowledge (information, grasp of concepts, and ability to apply them appropriately) required to perform job tasks must be inferred, and consequently domain-referenced testing is used for assessment of achievement in cognitive portions of the training program objectives.

In domain-referenced testing, the goal is to create an extensive pool of items which represents, in miniature, the basic characteristics of some important part of the original universe of knowledge (domain) (Hively, 1974). A domain must be capable of being described very specifically both in terms of content and format. The major advantage of domain-referenced testing is that it allows estimates, from a small sample of items, of the participant's "level of functioning," or the percentage of the total tasks of a specified type which would be answered correctly. The reliability of the test is the accuracy with which the probabilities of correct performance can be estimated. Validity can be assessed by logical analysis of the domain definition, the item generation scheme, and the individual test items (Millman, 1974).

The "domain" referred to for SEATP purposes is an educational objective. Consequently, in developing assessment procedures for any objective with a cognitive component, an attempt was made to generate a large set of test items which would represent the "pool" for that domain. The number of items generated was limited by practical constraints--cost and (computer) space. SEATP currently has on file 100 test questions for each objective. A domain or objective is regarded as fixed for the period between revalidation of competencies (program development model component 2.0 above), but the content of that domain may change at any time, and test questions are periodically reviewed to determine their continued relevance. (For example, a training objective may state that a special education administrator must be cognizant of the requirements of due process, but a change in law or regulation may alter specific due process procedures which the director must follow.)

Actual testing, under a domain referenced measurement method, is done by means of an instrument which is a random selection of those items which measure the objective. For SEATP pretests, the items selected for inclusion cover all objectives being assessed, and are randomly "mixed." An estimate is made of the criterion level (e.g., 80 percent correct) which constitutes mastery of each objective (domain), and instruction is provided in those domains where the participant falls below the criterion level. Post tests are developed individually for each participant, and consist of items randomly selected from each domain in which instruction was provided. A separate post test is developed for each objective to permit each participant to be tested as soon as he completes the course, and to allow repeated (different) post tests on each objective until the mastery criterion is reached (practical constraints dictate a limit of eight post tests).

The mastery criterion level is initially set at an arbitrary level, based on the judgment of program staff. After data on domain-referenced test performance and on performance assessment are available, scores on the two assessments are compared to determine the level of achievement on the domain-referenced test necessary to predict "pass" ratings on the simulations. That level then becomes the validated mastery criterion for the domain-referenced test.

Since participants are tested on only a small fraction of the items which measure achievement of each objective, the reliability of a domain-referenced testing procedure is dependent upon the probability that the participant's score on the items to which he/she responds represents the score he/she would attain on the entire (infinite) set of items in that domain. SEATP uses Bayesian statistical procedures (Novick and Lewis, 1974; Novick and Jackson, 1974) to prescribe the length of the test the participant should receive and to determine the criterion level which approximates the mastery criterion for the entire domain.

Prior to testing, an arbitrary estimate is made of the probability that participants will achieve at the mastery criterion level, which is used to determine pretest length and the passing score for each objective. Once a test has been administered, information is combined in a straightforward Bayesian procedure using the beta distribution to obtain prior estimates for the first posttest. This procedure continues until the estimate of the probability that the participant performs at the mastery level is sufficiently high to consider him/her "passed." ("Sufficiently high" is determined by the loss ratio for an objective; e.g., a loss ratio of 1.5 indicates that the loss associated with incorrectly passing a participant who has not reached the criterion level is one and one-half times greater than the loss associated

with incorrectly "failing" a student who has reached or exceeded the criterion level.) For example, an eight item post test on an objective with a passing score of 6 (75 percent) might be recommended when the mastery criterion is 70 percent and the loss ratio is 1.5 (the score required on the test is higher than the mastery criterion because of the short length of the test and because the loss ratio is more than 1).

All cognitive assessment information is recorded and scored on computer, and the system developed for use in SEATP contains programs and disc storage files which contain the item pool; maintain the status of individual participants in the training project; select, print, and score pre and post tests for each participant; and maintain an ongoing statistical summary of participants' progress through the training program. There are nine computer programs for these purposes:

(1) Creation of the master item file, including additions, modifications, and deletions.

(2) Recording of criterion levels and loss ratios for each objective (for a given group of participants, this information is fixed).

(3) Providing initial information on each participant which will be used in later programs (including estimates of the probability that a participant has achieved the criterion level, participant training and experience data, etc.).

(4) Determination of the number of items to be included in the pre test and random selection of items from the master file.

(5) Determining format and printing a copy of the batch pre test for each participant

(6) Scoring the pre test and updating the files for each participant (including a determination of the need for instruction and for a post test based on a revised achievement estimate).

(7) Examination of the participant's status and selection of items for a first post test

(8) Printing a post test and answer sheet for any post test

(9) Scoring post tests, updating the information file on each participant, and generating a new post test for each objective not passed. (A participant may take up to eight post tests per objective.)

Time parameters for developmental phases

Use of systems models such as the foregoing helps to clarify the logical structure of a procedure, since they are relatively independent of content. However, systems models of this type are also independent of time, and it is necessary to add at this point some estimates, based upon SEATP experiences, of the amount of time which should be allowed for development of each component of a training program using the SEATP model.

The amount of time required for initial determination of the population to be trained will vary with the method used and with the extent of documentation of need required by relevant funding authorities. Usually, however, these activities are done before a training model is selected, and thus time estimates for this component are not included here.

For development of the remaining components of the model, a minimum of one year must be allowed; the amount of staff time and other resources which must be deployed during that year will vary with the extent to which not only SEATP development procedures but content (objectives, item pool for domain-referenced testing, and instructional materials) can be used or adapted. Thus, less effort would be required to develop a preparation program for special education administrators in another state using the SEATP model than would be required to develop a comparable program in administration of other human services. One could also project that less effort would be required to develop an administrative education program than one for teachers or other direct service providers. The procedures, however, would be applicable in any case.

A one year development period is necessitated by the time required for competency identification, due to the inclusion of both identification and validation procedures in the development phase. Goal analysis and job

analysis can both be accomplished in 90 days, given favorable conditions. An anthropological field study to validate initially identified competencies, however, requires an entire year, and, if possible, additional time should be allowed for thorough data analysis. The advantage to completion of the anthropological study before the program begins is that the information from the study can be used to develop the domain-referenced test item pool, performance assessment procedures, course materials, and course exercises.

The job analysis and goal analysis provide the training objectives, which are necessary input into both the preparation of instruction and development of assessment components. Once objectives are known, course authors can be selected and materials preparation begun. If some use can be made of SEATP materials, or if instructional materials for objectives identified as high priority are readily available, instructional preparation for a year's instruction can be done in six months. (If instruction is likely to be sequential, some instructional preparation can continue while initial course work is conducted.)

The major tasks in developing assessment procedures, if SEATP computer programs are used, are preparing an item pool and developing simulated or on-the-job performance assessment procedures. If many items in the SEATP master item pool are applicable to a proposed education program, the task may be accomplished in perhaps eight months. If the entire pool must be developed, then a minimum of a year (after training objectives have been determined) must be allowed. Generation of test items is a difficult and often tedious process, and as many persons as are qualified and available should be involved in this process. Development of performance assessment procedures also varies with the extent to which

existing simulation materials and other tools can be employed, but the use of rating rather than the domain-referenced test procedure indicates that proportionately less time be spent in instument development (and more in administration of the performance assessment) than is the case for cognitive assessment.

ISSUES

The characteristics of the SEATP were not stipulated arbitrarily, nor did they evolve in a haphazard fashion. In many cases, a conscious effort was made to consider both the drawbacks of traditional training programs and the criticisms leveled at competency-based ones. This section will attempt to explicate and support some of the assumptions on which the program is based and to comment on issues to which this program is addressed.

Competency-based education

Appropriateness. One of the first criticisms of competency-based teacher education programs is the competency-based model itself, its validity and feasibility. Maxwell (1974) suggests that the approach is borrowed from the natural sciences and has been inappropriately transferred to a more complex and humane setting. His critique may or may not have force when applied to the undergraduate teacher preparation programs at which it is leveled, but it is less valid with reference to administrator preparation. The introduction of similar concepts (MBO, PPBS, operations research), has provided powerful tools for management in a number of areas, and, although administrator training programs are housed within colleges of education, administration itself is a discrete field (Simon, 1946), and educational administration has as much or more in common with business administration, public administration, hospital administration, etc., than it does with teaching. A competency-based administrative preparation program may thus be said to have merit because of the congruence of method and discipline. The SEATP approach acquires some *prime facie* plausibility because it is designed around identified types of problems

which tend to be in areas where competency-based education does show these strengths.

The question of appropriateness of a competency-based orientation appears in the literature in various formulations. One of the most common of these is the charge that the kinds of competencies which tend to be included in competency-based programs appear to be dictated by available means of measurement. The AACTE Committee (1974) noted the tendency of CBTE programs to emphasize simple, easily measured outcomes, to the exclusion of complex performances. Broudy (1972) expands on this concept, saying that the broader the objective is the more difficult it is to measure, but the narrower, the greater the possibility that learning will take place by rote and will not transfer. Grasp of concepts and theories, which alone provide explanation and understanding, are not within the purview of CBTE programs, in his view.

Although all competency-based programs are vulnerable to this charge, the nature of the position and the means of assessment in a program such as SEATP made this criticism less damaging. A relatively heavy cognitive, knowledge, or information base is defensible when one notes the extent to which administration and operation of special education programs is circumscribed by statutory and regulatory directives. Concepts and theories of administration can be and are taught in these programs, but these are measured not so much directly as in their application to tasks which have been determined to be essential parts of the director of special education role.

The procedures specified in the SEATP model for competency identification and for assessment of training outcomes make it possible to treat

this question as an empirical one. Data from the cognitive portion of the assessment scheme, which includes conceptual application, is compared to results of simulations of job tasks, and it will be possible to determine which competencies taught correlate with satisfactory levels of performance.

An analogous criticism might be made regarding teaching of attitudes and philosophy. Here, however, direct teaching is regarded as low priority for several reasons. First, desirable attitudes should be reflected in performances rated as satisfactory. Second, much of the participant's philosophy of education has been covered in previous education (entry level for special education administrators assumes a prior master's degree). In addition, philosophical and attitudinal considerations are introduced in the training sequence in indirect fashion: in course readings, by use of field consultants as role models, through peer interaction, etc. And, again, if the assessment system indicates performance deficiencies which may be related to attitudinal factors, instructional methods and content can be adjusted.

Competency identification. Some of the most persistent criticisms of competency-based teacher education programs center around the asserted impossibility of specifying the right competencies, the lack of coherence of sets of competencies developed, and the methods employed for developing and selecting them. SEATP has attempted to take these concerns into account in developing its methods of competency identification. The empirical approach taken, the use of multiple identification methods, and explicit provisions for periodic revalidation of competencies selected, as well as the emphasis on minimal essential competencies, represent attempts to resolve issues in this area.

In teacher education, Broudy (1974) is among those who find no available list of the basic teacher competencies. In particular, he questions

the merit of research that has gone into specifying teacher performances and notes that contradictory results have been obtained. AACTE (1974), on the other hand, notes a plethora of lists of competencies, but finds them to be unrelated to each other, fragmented, and having no guiding conceptualization of what the teacher's role is.

These observations are probably closely related to methods used for competency identification. A common method of developing competencies, often because the pressures of time or legislative mandate, is by top-of-the-head consensus, with little validation. SEATP designated derivation of special education administrator competencies as a major goal of its first year of operation, with multiple methods used to cross-validate each other. Empirical methodology, as detailed in the subsequent section of this report, included a job analysis using an industrial relations model, and an anthropological field study, along with a consensus on role description and training objectives by a jury of experts and practicing special education administrators (goal analysis). Supplemental information on priorities was obtained by a review of a number of surveys in this state (Spriggs, 1972; Bilyeu, 1973; and Wedl, 1973). A convergence on tasks, problems and priorities has been noted.

This use of multiple methods of competency identification also meets another criticism of CBTE programs, often made by teacher organization, that there is a lack of sufficient input from the field (Cartwright and Pershing, 1973). The SEATP training model is based primarily upon empirically validated input from the field.

Empirical specification and validation of competencies has some additional payoffs: It pushes educators for clearer role definition, a concern of educators, schools, and communities for decades (Massanari, 1973). It may

also help schools meet new and emerging requirements, such as the need for job definition as a part of affirmative action programs (U.S. Equal Employment Opportunity Commission, 1974).

Input from the field provides a means of settling another dispute: that of setting priorities is among possible competencies to be included in the training program. Thomas and Kay (1974) note the need to determine priorities based upon practical constraints. Any educational preparation program can only focus on a small portion of all possible knowledge and skills. SEATP has attempted to identify a core of minimum essential competencies without which a person could not function in the position of director of special education. In addition to resource constraints, and the agreement of various means of competency identification, it has been considered essential to focus upon these minimum competencies simply because new special education directors do not have them. The emphasis on minimum essential competencies should not be regarded, however, as merely an accommodation to existing condition; it carries with it some strong intrinsic program development advantages. Popham (1973) points out that:

> It is easier to improve a low density program (one that concentrates upon minimum competencies) by supplementing it than it is to delete segments of a high density program, for in the latter approach we may be excising the very ingredients that contributed to whatever effectiveness the program possessed. (p. 5)

Thus emphasis on minimum essential competencies helps to promote the program modification provisions which are central to SEATP.

Assessment. Questions about assessment are inherent in concerns about appropriateness of a competency-based approach and methods of competency identification and selection. However, another area of concern

is the appropriateness of the measures used to evaluate whether or not a teacher has attained the specified competencies. Since "performance" is a defining characteristic of education, and if some type of performance assessment is used to evaluate instructional competency-based outcomes, this type of criticism would appear to be circular (rejection of the concept of competency-based training itself), or reassertion of the impossibility of specifying the correct competencies. However, given a more favorable construction, such comments could suggest a need to measure long-term retention or maintenance of adequate performance, which can easily be incorporated into the SEATP model.

SEATP has placed primary reliance on performance ratings as a means of assessment, both directly (simulated assessment of on-the-job peformance) and indirectly (domain-referenced testing in areas of knowledge related to areas of essential job performance). Correlation of domain-referenced test results with performance ratings is used to evaluate the extent to which cognitive instruction influences job performance.

The domain-referenced test procedure is an approximation to direct measurement of competencies in cognitive areas. Statistical procedures (described in the section on program development) are used to infer the extent to which the test used for an individual measures his grasp of information, concepts, and their application in the domain being measured.

Purpose of preparation programs

Product validation of competency-based programs. One of the most difficult areas of controversy for competency-based education to resolve is that of the ultimate means of evaluating or validating the training program. Must its criterion of effectiveness be the pupil changes brought about?

Some writers, such as Rosner and Kay (1974), consider evaluation of competencies against pupil outcomes to be mandatory. They posit a four-part structure for development of a competency-based program: tentative competency identification, focused training for those competencies, assessment of degree of mastery, and validation of competencies against pupil outcomes. In a similar vein, Maxwell (1974) asserts

> If what the student is asked to do is not shown to affect his teaching effectiveness, it has no valid claim for inclusion in a performance-based program. (emphasis in the original) (p. 307)

and terms competency-based programs not validated by pupil outcome as "illegitimate." Others consider teacher performance to be primary; relevant knowledge should be taken into account, and evidence of pupil behavior should be used where valid and feasible. Elam (1972), for example, notes that PBTE stipulates a focus on performance and does not discuss pupil outcomes.

Weber (1974) discusses the issue in terms of three types of criteria which have been used by numerous writers for studying teacher affectiveness: (1) presage variables such as personality and knowledge, (2) process or performance variables, such as teacher/student interaction behavior, and (3) product variables, or changes in student behavior. The latter criterion is the most rigorous of the three.

SEATP uses the knowledge and performance specifications developed through the competency identification process as internal evaluation criteria. At present, external validation in terms of effects on performance of handicapped pupils or other impact on special education programs because the type of product or program change which might be expected is difficult or impossible to specify. There is some evidence suggesting that presence of a special education administrator is associated with availability of

services for handicapped children (Prazich, 1972), but the study did not attempt to determine whether the administrator was responsible for those changes, or whether conditions which led school districts to employ a director also were responsible for increased allocations for direct services.

Effectiveness studies using Weber's criteria would also be difficult to conduct due to the situation-specific nature of some factors affecting performance and product evaluation. On the basis of available information regarding director of special education role and function, one would expect to find that knowledge and personality factors might be fairly consistent among effective directors, performance might be somewhat consistent, but product variables among effective directors would very likely be divergent.

The expected type of consequence or product of effective teacher behavior is changes in pupil behavior, although Elam (1971) notes that one of the difficulties in securing agreement on evidence of adequate teacher performance is that answers are situation-specific. With special education directors even the type of product which could be expected as an outcome may be situation-specific. It is to be expected that consequences might be invluenced by (1) differential service delivery system responsibilities of special education administrators and (2) administrative role functions. Some of this diversity is idiosyncratic to individual school systems and their policies and procedures. Others might systematically vary among school systems in urban, rural and suburban areas, between single and multiple district programs, and by the size of the district. The complexity of situations suggests that product evaluation of special education administrators in terms of special education program outcomes would not be useful at this time.

Education for leadership. Related to the difficulty in specifying the products to be expected as a result of special education administrator training is the press for leadership training of such personnel. The Council for Exceptional Children's professional standards committee (Geer, 1966), for example, stipulated that an administrator or supervisor exhibit that "quality of leadership which implies creative effort as well as efficient performance of routine duties" (p. 442). A similar distinction is the ability of an administrator to anticipate future needs and develop actions accordingly, as opposed to maintenance of the status quo.

Competency-based programs, based upon examination of existing positions and preparing persons to function in those positions, can be charged with ignoring the need for leadership in the field, and making few attempts to provide education to encourage those who move beyond adequate performance on the job.

Requests for training leadership personnel rest on the assumption that "leadership" in a special education administration position can be operationally defined, which in turn implies that the tasks to be accomplished are known. However, it has been previously indicated that the director's job is vague and varies with the situation. "Leadership" probably varies accordingly. It is recognized that special education directors operate in an ecology. Many factors determine a response in a given situation, and many of them are unique.

The SEATP emphasis on minimum essential competencies, recognizing the diversity in job situations, is an attempt to respond to established widespread training needs without attempting to forecast needs in each position.

Thus, in addition to difficulties in specifying expected products attributable to an effective director of special education, it is often difficult to assess appropriate performance beyond those tasks which are required of all directors. The extent to which further specification of leadership behavior can be made is a legitimate subject for research, and the competency identification and assessment data collected as an ongoing part of SEATP operations might well provide a base for such research.

Conclusion

SEATP has been developed as an attempt to meet critical continuing education needs of special education administrators. At this point the program and model are still regarded as tentative and subject to revision from experience. While it is recognized that a new system with some differing requirements might cause some discomfort or disequilibrium in those trained by other methods, SEATP planners believe that both the methodology and procedure used in the program are defensible.

The SEATP approach gains additional credence from consideration of the alternatives. Inability to specify and justify competencies appears fraught with danger as court decisions and legislative pressures regarding accountability of programs to educate are added to other general concerns of citizens for education as it is now structured.

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